

Overview

In this lab, you will learn how to configure continuous integration (CI) and continuous deployment (CD) for your applications using Build and Release in Azure Pipelines. This scriptable CI/CD system is both web-based and cross-platform, while also providing a modern interface for visualizing sophisticated workflows. Although we won't demonstrate all of the cross-platform possibilities in this lab, it is important to point out that you can also build for iOS, Android, Java (using Ant, Maven, or Gradle) and Linux.

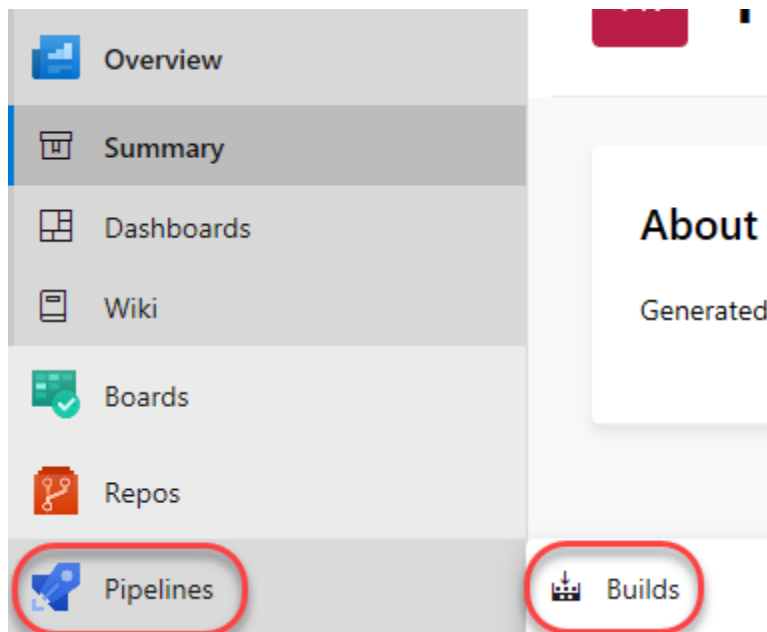
Prerequisites

- This lab requires you to complete task 1 from the [prerequisite](#) instructions.

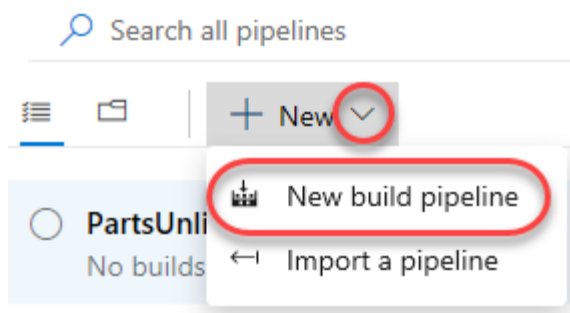
Exercise 1: Introduction to Azure DevOps Build

Task 1: Creating a basic build pipeline from a template

- Navigate to your team project on Azure DevOps.
- Navigate to **Pipelines | Builds**.



- Select **New | New build pipeline** to create a new build pipeline.









4. The default option for build pipelines involves using YAML to define the process. If you are interested in that, please check out that lab. For this lab, click **use the classic editor**.

Connect Select Configure Review

New pipeline


Where is your code?


-  Azure Repos Git YAML
Free private Git repositories, pull requests, and code search
-  Bitbucket Cloud YAML
Hosted by Atlassian
-  GitHub YAML
Home to the world's largest community of developers
-  GitHub Enterprise Server YAML
The self-hosted version of GitHub Enterprise
-  Other Git
Any Internet-facing Git repository
-  Subversion
Centralized version control by Apache


[Use the classic editor](#) to create a pipeline without YAML.


5. The first thing you'll need to do is to configure the source repository. Every major platform is available, but the default options are all we need here. This build will use the **master** branch of the **PartsUnlimited** repo. Leave the defaults and click **Continue**.


Select a source


 Azure Repos Git


 TFVC

 GitHub


 GitHub Enterprise

 Subversion


 Bitbucket Cloud

 External Git


Team project

 Parts Unlimited Refresh

Repository

 PartsUnlimited

Default branch for manual and scheduled builds

 master

Continue

6. Locate the **ASP.NET** template and click **Apply** to apply this template to the build definition. Note that there are many options that should cover all of our mainstream

scenarios. For our purposes here, we'll just build the project using the baseline ASP.NET template.

Featured



.NET Desktop

Build and run tests for .NET Desktop or Windows Classic Desktop solutions. This template requires that Visual Studio be installed on the build agent.



ASP.NET

Build ASP.NET web applications

Apply



ASP.NET Core

Build ASP.NET Core web applications targeting .NET Core

7. The process for this build pipeline is easy to follow. After getting the source, Azure DevOps will use NuGet to restore any dependent packages. Then, the project will be built and tested. The results will then be published to the configured target.

Pipeline

Build pipeline

Get sources
PartsUnlimited master

Agent job 1
Run on agent

Use NuGet 4.4.1
NuGet Tool Installer

NuGet restore
NuGet

Build solution
Visual Studio Build

Test Assemblies
Visual Studio Test

Publish symbols path
Index Sources & Publish Symbols

Publish Artifact
Publish Build Artifacts

8. Select the **Variables** tab. Here you can configure special parameters to be used during the build, such as the configuration or platform.

Tasks	Variables	Triggers	Options	Retention	History	Save & queue	Discard	Summary	Queue	...
Process variables										
Variable groups										
Predefined variables										
		Name	Value							
		BuildConfiguration	release							
		BuildPlatform	any cpu							
		system.collectionId	2d7575a1-6a97-425f-a41a-dafa7294827f							
		system.debug	false							
		system.definitionId	< No definition id yet >							
		system.teamProject	Parts Unlimited							

- Select the **Triggers** tab. These triggers enable you to automatically invoke builds on a schedule, when another build completes or when changes are made to the source. Check **Enable continuous integration** so that this build will get invoked whenever source changes are committed.

Tasks	Variables	Triggers	Options	Retention	History	Save & queue	Discard	Summary
-------	-----------	-----------------	---------	-----------	---------	--------------	---------	---------

Continuous integration

PartsUnlimited
Enabled

Scheduled + Add

No builds scheduled

Build completion + Add

Build when another build completes

PartsUnlimited

☒ **Enable continuous integration**

☐ Batch changes while a build is in progress

Branch filters

Type Branch specification

Include master

- Select the **Options** tab. This section includes a wide variety of options related to the build workflow. Note that you'll generally configure options for specific build tasks on the configuration views of the tasks themselves.

Tasks	Variables	Triggers	Options	Retention	History	Save & queue	Discard	Summary	Queue	...
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Build properties
Define general build definition settings

Description

Build number format ⓘ
\$(date:yyyyMMdd\$(rev:r))

☐ Badge enabled ⓘ

New build request processing

☒ Enabled - queue and start builds when eligible agent(s) available

☐ Paused - queue new builds but do not start

☐ Disabled - do not queue new builds

Automatically link new work in this build
When a build completes successfully, create links to all work items linked to associated changes. Enabled

Only link to work added to specific branches

Type Branch specification

Include * *

+ Add

Create work item on failure
Create a work item for each failed build Disabled

Build job
Define build job authorization and timeout settings

Build job authorization scope ⓘ
Project collection

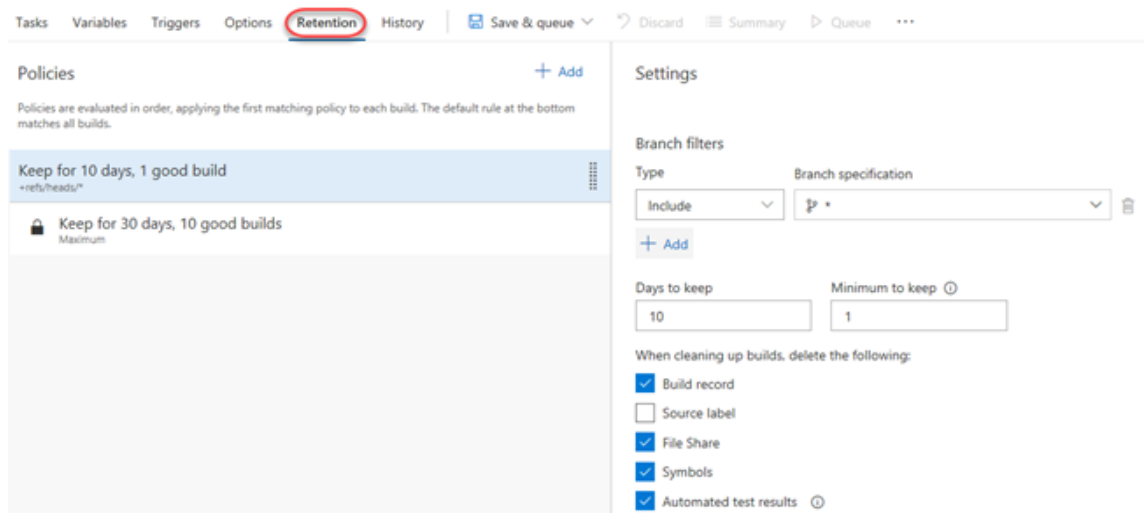
Build job timeout in minutes ⓘ
60

Build job cancel timeout in minutes ⓘ
5

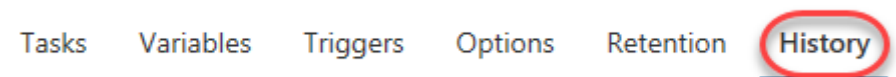
Demands
Specify which capabilities the agent must have to run this process

Name	Condition	Value
+ Add		

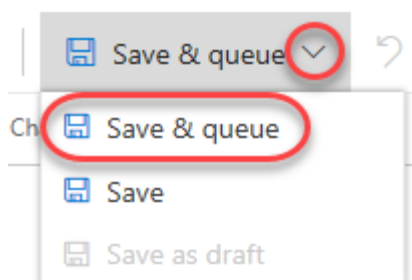
- Select the **Retention** tab. This is where you configure which builds are retained and for how long.



12. Select the **History** tab. There's nothing here yet, but it will show a history of changes you make to the build definition.



13. Select **Save & Queue** | **Save & Queue** to save and queue a new build.



14. Accept the default options by clicking **Save & queue**.

Save build definition and queue

Save comment

Agent queue

Branch

Commit

Variables

Demands

BuildConfiguration

release

BuildPlatform

any cpu

system.debug

false

[+ Add](#)

Save & queue

Cancel

Task 2: Tracking and reviewing a build

1. Click the link to the newly created build.

 ... > Parts Unlimited-ASP.NET-CI

 Build **#20180608.1** has been queued.

2. Depending on load, the build may need to wait in the queue for a moment.



Parts Unlimited Refresh-ASP.NET-CI 20180906.1

 PartsUnlimited ·  master ·  298aa78 : Set up CI with Azure Pipelines · Manual build

 [Add a tag](#)

- Once the build begins, you'll be able to track the console output. If you want to review an earlier task, you can click to review its logs.

Agent job 1 Job
Pool: [Hosted VS2017](#) · Agent: Hosted Agent


- ✓ Initialize Agent · **succeeded**
- ✓ Initialize job · **succeeded**
- ✓ Checkout · **succeeded**
- ✓ Use NuGet 4.4.1 · **succeeded**
- ✓ NuGet restore · **succeeded**

▶ Build solution

```
*****
Starting: Build solution
*****


=====
Task       : Visual Studio Build
Description: Build with MSBuild and set the Visual Studio version property
Version    : 1.126.0
Author     : Microsoft Corporation
Help       : [More Information](https://go.microsoft.com/fwlink/?LinkID=613727)
=====
```


- The build should eventually succeed, which you can review in the **Summary** tab.

 **Parts Unlimited Refresh-ASP.NET-CI** 20180906.1
PartsUnlimited · master · 298aa78 : Set up CI with Azure Pipelines · Manual build
[Add a tag](#)

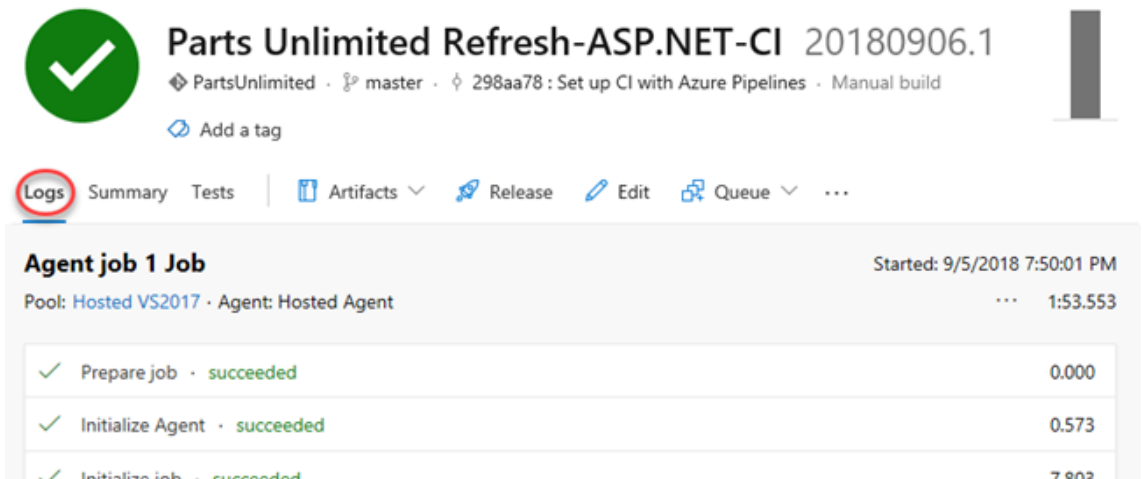
Logs **Summary** Tests | [Artifacts](#) ▾ [Release](#) [Edit](#) [Queue](#) ▾ ...

Progression

 **Build artifacts published** ^

 drop
File container

- Select the **Logs** tab to see each step and how long it took.



Parts Unlimited Refresh-ASP.NET-CI 20180906.1
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 Add a tag

Logs Summary Tests Artifacts Release Edit Queue ...

Agent job 1 Job Started: 9/5/2018 7:50:01 PM
 Pool: Hosted VS2017 · Agent: Hosted Agent ... 1:53.553

✓ Prepare job · succeeded	0.000
✓ Initialize Agent · succeeded	0.573
✓ Initialize inh · succeeded	7.803

- Select the **Tests** tab to review test performance for this build. Note that you also have easy access to the pipeline editor, the ability to queue a new build and download the artifacts of this build.



Logs Summary Tests Artifacts Release Edit Queue ...

Summary ^

1 Run(s) Completed (1 Passed, 0 Failed, 0 Not impacted, 0 Others)

16 Total tests +16

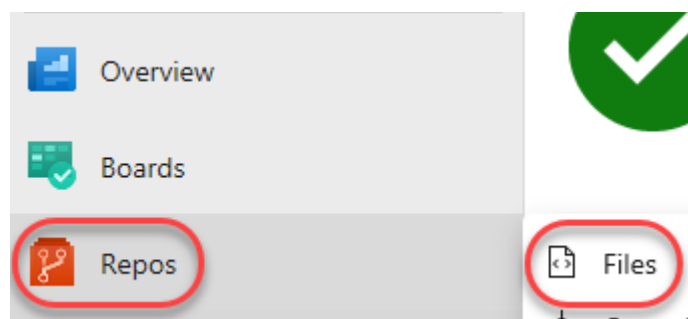
14 Passed
0 Failed
2 Others

87.5% Pass percentage ↑ 87.5%

7s 927ms Run duration ↑ +7s 927ms

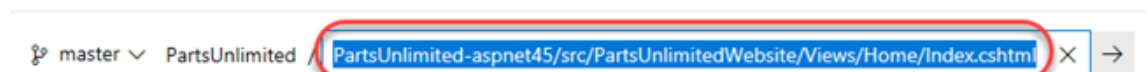
Task 3: Invoking a continuous integration build

- The build was configured earlier to support continuous integration. Navigate to the code for this project using **Repos | Files**.



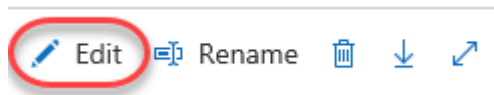
Overview
Boards
Repos
Files

- Open the file at **PartsUnlimited-aspnet45/src/PartsUnlimitedWebsite/Views/Home/Index.cshtml**.

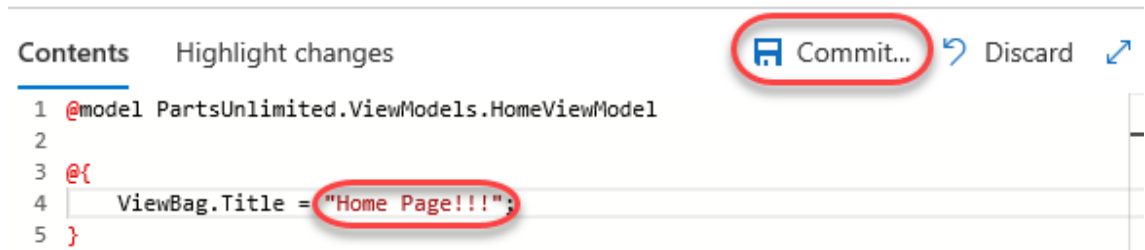


master PartsUnlimited PartsUnlimited-aspnet45/src/PartsUnlimitedWebsite/Views/Home/Index.cshtml

3. Click **Edit**.



4. Make a minor cosmetic change, such as by tweaking the title of the document.
Click **Commit**.



5. Accept the default commit details and click **Commit**.

Commit

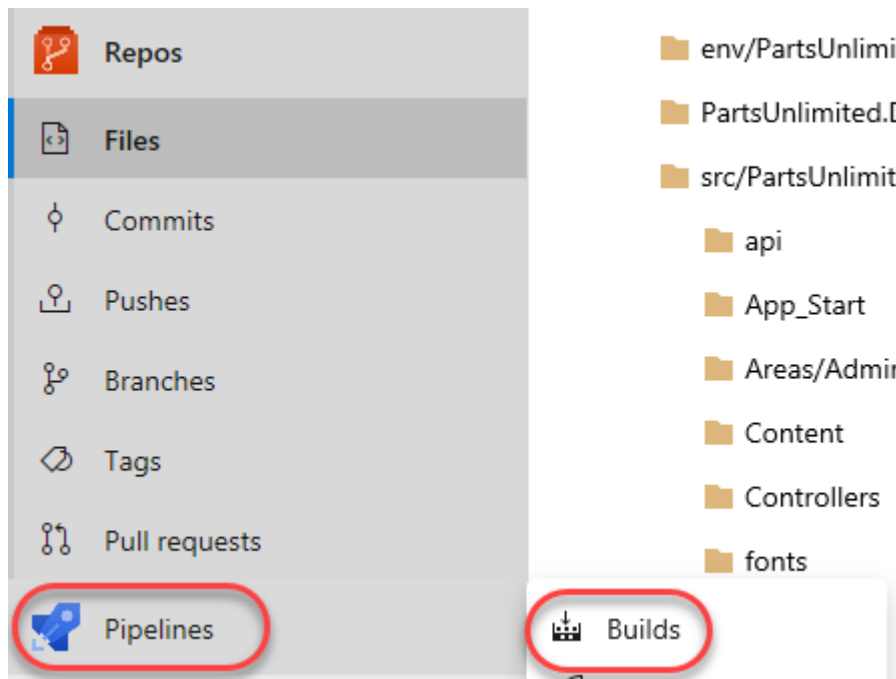
×

Comment

Branch name

Work items to link

6. A build should be underway shortly. Select **Pipelines | Builds** to see if it's in progress.



7. You should now see that a new build (note the .2) is in progress and that it was triggered by your change. Click the build to track it.



8. This build should run and succeed just like the previous build.

